CAPITAL BELTWAY OVERPASS
George Washington Memorial Parkway, spanning Interstate 95
Alexandria Vicinity
Fairfax County
Virginia

HAER No. VA-121

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

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HISTORIC AMERICAN ENGINEERING SURVEY

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HAER No. VA-121

I. INTRODUCTION

Location: Located just north of South Street, on Washington Street, in the City of Alexandria, Virginia. Present location of Capital Beltway (I95) intersection with GWMP.

Dates of Construction: Southern Railway Industrial Overpass (MVMH Bridge No. 8), 1931. Demolished and replaced by Capital Beltway Overpass in 1960s.

Type: Southern Railway Overpass: Five-span reinforced concrete "T" beam trestle.
Capital Beltway Overpass:

Designers: Southern Railway Overpass: Bureau of Public Roads, Division of Bridges. J.V. McNary-- Engineer-in-Charge of construction. E.T. Larson-- Designer and Resident Engineer, construction, 1930.
Capital Beltway: Virginia Department of Transportation.

Contractor: Southern Railway Overpass: Merritt-Chapman and Scott Corporation, NYC.

Present Use: Allows the MVMH to pass over the Capital Beltway.

Present Owner:

Significance: The Southern Railway Underpass was one twelve bridge structures built along the original Mount Vernon Memorial Highway (MVMH).

Project Information: Documentation of the George Washington Memorial Parkway and Clara Barton Parkway was undertaken as a multi-year project by the Historic American Buildings Survey and the Historic American Engineering Record (HABS/HAER), a combined division of the National Park Service, Robert Kapsch, Chief. The project was sponsored by the Park Roads Program of the National Park Service, John Gingles, Deputy Chief, Engineering and Safety Services Division. The Project Supervisor was Sara Amy Leach, HABS Historian. Bridge reports were prepared by Elizabeth M. Nolin (1988); Michael P. Kucher (University of Delaware, 1993); and Jennifer P. Wentzien (University of Washington, 1994).

HABS Report No. VA-69 prepared by Timothy Davis (University of Texas) provides an overview history of the entire parkway project. Jack E. Boucher and Jet Lowe produced the large-format photographs. The Washington-based summer 1994 documentation team was headed by landscape architect Tim Mackey (Harvard University, Graduate School of Design).

II. HISTORY

The Mount Vernon Memorial Highway (MVMH) was completed in 1932 and became the first segment of what is now known as the George Washington Memorial Parkway (GWMP). During the planning of the route for the MVMH, the Southern Industrial Railway was moved south to a more inconspicuous location in the cut made by an earlier brick yard. The overpass was located just north of South Street on Washington Boulevard in Alexandria, Virginia. The overpass created a grade separation between the railroad and the MVMH, a fundamental concept of parkway design. In the 1960s the Capital Beltway, also known as Interstate 95, was designed to cross under the GWMP at the location of the Southern Railway Industrial Track Overpass. Because the structure did not provide the proper clearance for the Interstate, it was replaced by a bridge designed and constructed by the Virginia Department of Transportation.

History of Design

The Southern Railway Overpass was one of twelve bridge structures designed and built by the BPR between 1929 and 1932. The "Report on Alternative Routes for the Proposed Mount Vernon Memorial Highway" (January 1929) proposed a slab and girder structure because there was insufficient clearance for the preferred arched opening. The overpass was considered one of two relatively unimportant bridges along the MVMH[1], and was not addressed directly by the consulting architect Gilmore Clarke. Its utilitarian design is typical of engineer-designed short-span highway bridges beginning in the early 1900s. While it is not evident that the railway contributed to the cost of the overpass, railroad bridges are typically of more utilitarian construction due to the cost concerns of railroad management[2].

The project was designed and constructed under the direction of the Bureau of Public Roads with the approval of the railroad. The final construction drawings are dated December 1929 and signed by J.M. McNary, Bridge Engineer for the BPR with approval from the railroad with respect to clearances. Merritt-Chapman and Scott Corporation of New York City, acting through their Baltimore Office, was the low bidder on Unit III, Bridges and was the General Contractor for all twelve bridge structures along the original MVMH.

In 1961 the Woodrow Wilson Bridge was built to carry the Capital Beltway across the Potomac. The present overpass allows the Capital Beltway to pass below the GWMP in Alexandria, Virginia.

Description of the Southern Railway Overpass

The Southern Railway Overpass was a five-span, reinforced concrete deck girder bridge with a timber handrail. The bridge had two 23.0 feet outside spans, two 28.0 feet spans and a center 33.0 feet span. The total length was 135.0 feet. The bridge was 66-feet wide between rails and originally included a forty foot width of pavement with bridle path on each side. A vertical clearance was 24'-5" above the tracks.

The substructure consisted of two abutments and four reinforced concrete bents, all resting on spread footings. The outer bents rested on five separate footings. The two inner bents rested on continuous

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[1]R.E. Toms and J.W. Johnson, "The Design and Construction of the Mount Vernon Memorial Highway," Journal of the American Concrete Institute 3 (April, 1932), p.573.

[2]Gilmore Clarke, "Collaboration in Bridge Designing," Architectural Forum, Vol. XLVIII, No. 5, Part 2 (May 1928), p. 734.

footings with a 6' collision pier acting simultaneously as a retaining wall for the cut. Foundations rested on a very dry, consolidated sand and clay. All concrete was mixed at the central mixing plant of the Super-Concrete Corporation of Washington, D.C. Trucks equipped with agitators transported the wet concrete to the site in 40 to 50 minutes. Concrete pours were made between July 3 and October 19, 1930. Abutments and bents were completed by September 9. The superstructure consisted of five separate spans of reinforced concrete beam and slab type construction. Each span had a longitudinal expansion joint at the center of the roadway. 2" x 4" x 18" beveled keys, 12" on center, were cast into the top of the beams to help transfer horizontal shearing stresses from the slab into the substructure. The white oak timber railing was supplied sawn to full-dimension and was adzed to specification on site. After placement, the railing was stained.

The structure was designed for the American Association of State Highway Officials H-20 live loading, which allows for a standard twenty-ton two-axle truck loading. Excavation for the bridge began June 6,1930 and the railing was completed June 23, 1931[3]. Final construction costs were reported as $54,205.08.[4]

This structure was demolished in the 1960s.

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[3]U.S. Department of Agriculture, Bureau of Public Roads, "MVMH Final Report, Unit III, Bridges," pp.114-117.

[4]Ibid.

III. SOURCES

Clarke, Gilmore. "Collaboration in Bridge Designing: 1. The Architect," Architectural Forum, Vol. XLVIII, No. 5, Part 2 (May 1928).

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U.S. Department of Agriculture, Bureau of Public Roads. "Mount Vernon Memorial Highway Final Construction Report, Unit III, Bridges," 1932; Box 1399; 420 General Virginia - 1926-29; Bureau of Public Roads Classifies Central File 1912-1950, Record Group 30; National Archives at College Park, Maryland.

U.S. Department of the Interior, Historic American Buildings Survey (HABS), No. VA-69, "George Washington Memorial Parkway," 1994. Prints and Photographs Division, Library of Congress, Washington D.C.